OMI Level 1b flags

In the descriptions below bit 0 is the LSB (Least Significant Bit).

Groundpixel quality flags (2 bytes):

Bit	Description
0-3	Land / water flags 0=Shallow ocean 1=Land 2=Shallow inland water 3=Ocean coastline / Lake shoreline 4=Ephemeral (intermittent) water 5=Deep inland water 6=Continental shelf ocean 7=Deep ocean 8-14=Not used 15=Error flag for Land / Water
4	Sun glint possibility flag
5	Solar eclipse possibility flag
6	Geolocation error flag: indicates that one or more geolocation parameters for the ground pixel are not to be trusted. In general this indicates that an error occurred when determining the latitude / longitude of the ground pixel and that therefore also the Land/Water and Snow/Ice information is not to be trusted.
7	Geolocation warning flag: indicates that refraction is not included in line-of-sight and/or solar azimuth calculations.
8-14	Snow / Ice flags [based on NISE]: 0=Snow-free land 1-100=Sea ice concentration (%) 101=Permanent ice (Greenland, Antarctica) 102=Not used 103=Dry snow 104=Ocean [NISE-255] 105-123=Reserved 124=Mixed pixels at coastline [NISE-252] 125=Suspect ice value [NISE-253] 126=Corners (undefined) [NISE-254] 127=Error
15	NISE nearest neighbour filling flag. For the current pixel no valid NISE value was found. Nearest neighbour interpolation

	was used to find a valid NISE value.

XTrackQualityFlags (1 byte):
This flag is used to identify ground pixels affected by the so-called row anomalies.

Bit	Description
0-2	Row anomaly correction flags. These flags indicate whether the pixels are affected by the so called "row anomalies" that have been detected in orbit. 0 = Not affected by any row anomaly, pixel can be used. 1 = Affected by row anomaly; pixel not corrected, do not use pixel. 2 = (Slightly) affected by row anomaly; pixel not corrected, pixel can be used with caution. 3 = Affected by row anomaly; pixel corrected, but correction is not optimal, use pixel with caution. (Not used yet.) 4 = Affected by row anomaly; pixel corrected and correction is optimal, pixel can be used, but is still less accurate than pixels that are not affected by row anomaly. (Not used yet.) 5-6 = Not used. 7 = Error during correction for row anomaly, do not use pixel.
3	Reserved for future use.
4	Pixel may be affected by the wavelength-shift effect.
5	Pixel may be affected by the blockage effect.
6	Pixel may be affected by the stray sunlight effect.
7	Pixel may be affected by the stray earthshine effect

Measurement quality flags (2 bytes).
This flag contains information on measurement level, so for all ground pixels in a specific measurement:

Bit	Description
0-6	Provide information on how the instrument was operated. When any of these flags is set do not use the data.
7	Indicates that zoom data have been rebinned to match global groundpixels. This flag can be found in the global products (OML1BRUG, OML1BRVG) for orbits that OMI was operated in the zoom mode.
8	Indicates that a calculated fall-back background image from the OPF has been used for the background correction,

	because the regular (measured) background image was not available. The resulting background corrected light image is expected to be less accurate in this case. Use the data with caution in this case.
9	Provides information on processing steps and is not critical for Level 2 generation (smear correction).
10	Indicates that OMI was in the South Atlantic Anomaly. Various pixels may have enhanced noise levels or transient behaviour.
11	Indicates that Aura was performing a maneuver so that the viewing directions are off-nominal.
12	Indicates that there was an error in the geolocation for the measurement (so for all ground pixels). Do not use the measurement.
13	Indicates that the electronic offset could not be determined from the measurement and that a pre-defined value has been used. This may result that the spectra contain a small offset.
14	Indicates that at least one of the individual irradiance measurements used for the calculation of the averaged irradiance data output product had an azimuth angle that exceeded a predefined lower or upper boundary. This resulted in clipping of the azimuth angle before the irradiance goniometry correction was applied to that or those individual irradiance measurement(s). The clipped individual measurements were still used in the calculation of the averaged solar irradiance output product. When this flag is set, the resulting irradiance data output product has a lower accuracy and shall be used only with caution, and preferably not be used at all.
15	Not used.

Pixel quality flags:
This 2-byte flag contains information on individual pixel level in a specific measurement. A distinction is made between radiance and irradiance level-1b data, because for the pixel quality flags different recommendations apply to these data products.

Bit	Description
0	If set this bit indicates that the pixel data is missing and can not be used (radiance + irradiance).
1	If set this bit indicates that the pixel data is bad and shall not be used, either because the pixel was ADC saturated or because the pixel was dead according to the dead pixel map

	in the OPF. A pixel can be declared dead when its dark current is too high, or when the pixel is disconnected (always 0), or when the pixel response in a White Light Source (WLS) measurement is too low. Applies to both radiance and irradiance.
2	If set this bit indicates that there was a data processing error for this pixel. Processing errors can occur for a variety of reasons. If bit 2 is set the data can still be used, but with caution (radiance + irradiance).
3	If set this bit indicates that a transient spike has been detected. For radiance data this implies: do not use the pixel. For irradiance data this means that one of the images before averaging contained a transient spike for this pixel. For irradiance the data from the pixel can still be used, even when this flag has been set.
4	If set this bit indicates that the pixel features strong Random Telegraph Signal (RTS) behaviour. The pixel shall not be used (radiance + irradiance).
5	If set this pixel indicates that the signal may be saturated. For radiance this implies: do not use the pixel. For irradiance data this means that one of the images before averaging may have been saturated for this pixel. For irradiance the data from the pixel can still be used, even when this flag has been set.
6	If set this pixel indicates that during the noise calculation the result was below zero and set to zero. The pixel can still be used (radiance + irradiance).
7	If set this bit indicates that a limit was exceeded for the applied dark current correction. The pixel may still be used with caution (radiance + irradiance).
8	If set this bit indicates that a limit was exceeded for the applied offset correction. The pixel may still be used with caution (radiance + irradiance).
9	If set this bit indicates that a limit was exceeded for the applied exposure smear correction. The pixel may still be used with caution (radiance + irradiance).
10	If set this bit indicates that a limit was exceeded for the applied stray light correction. The pixel may still be used with caution (radiance + irradiance).
11	If set this bit indicates that the signal is in the non-linear range of the instrument. The pixel can still be used (radiance + irradiance).
12	If set this bit indicates that the dynamic offset correction could not be applied and that offset correction data from the OPF

	were used instead. The pixel can still be used, but the accuracy of the offset correction is smaller (radiance + irradiance).
13	If this bit is set to 0 the correction for inhomogeneous ground scene was applied to the wavelength assignment of the radiance data and that the pixel can be used without concern. If set to 1 this correction was not applied for radiance data, in that case expect a considerably less accurate wavelength assignment for that pixel. One of the reasons why the correction may not have been applied is that the small pixel in the same row has been flagged bad. For the irradiance level-1b data product this flag is irrelevant.
14-15	Relevant only for users of the level-1b calibration product.